

Applicant: Hirokazu IKEDA, et al.

Title: Information Processing Device, Information Processing Device...

Attorney Docket No. 16869K-111100

Sheet 1 of 22

1/22

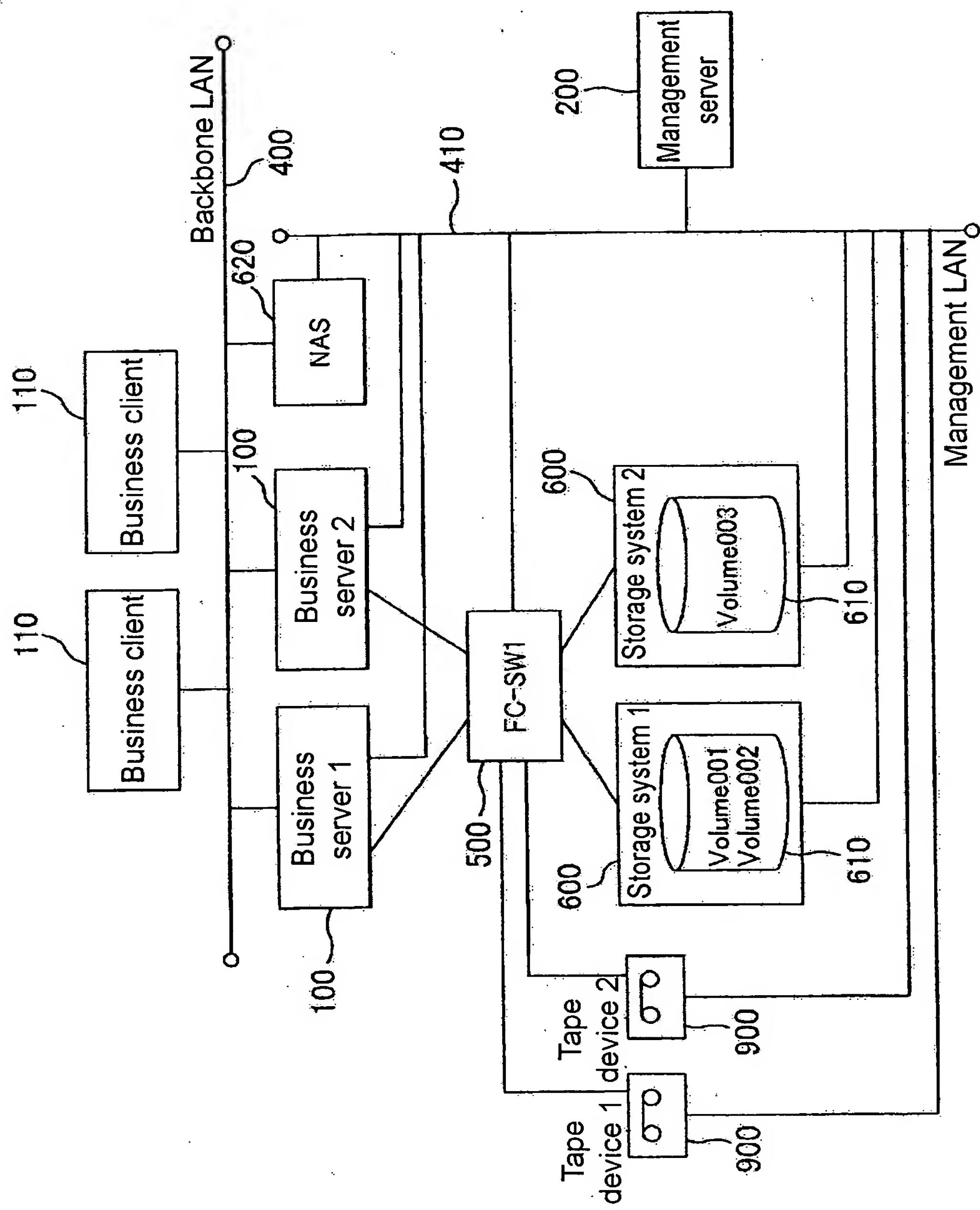


FIG. 1

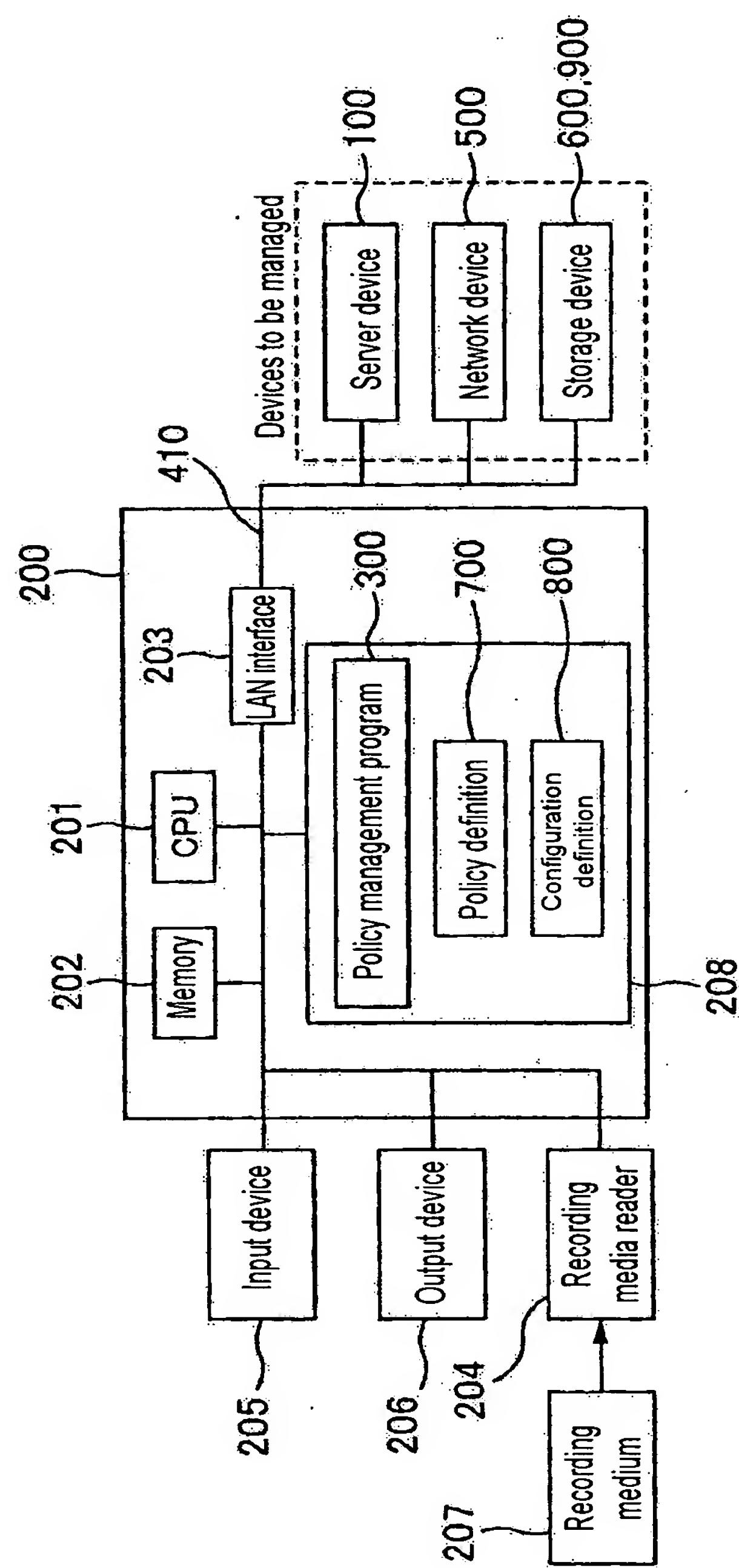


FIG. 2

Applicant: Hirokazu IKEDA, et al.

Title: Information Processing Device, Information Processing Device...

Attorney Docket No. 16869K-111100

Sheet 3 of 22

3/22

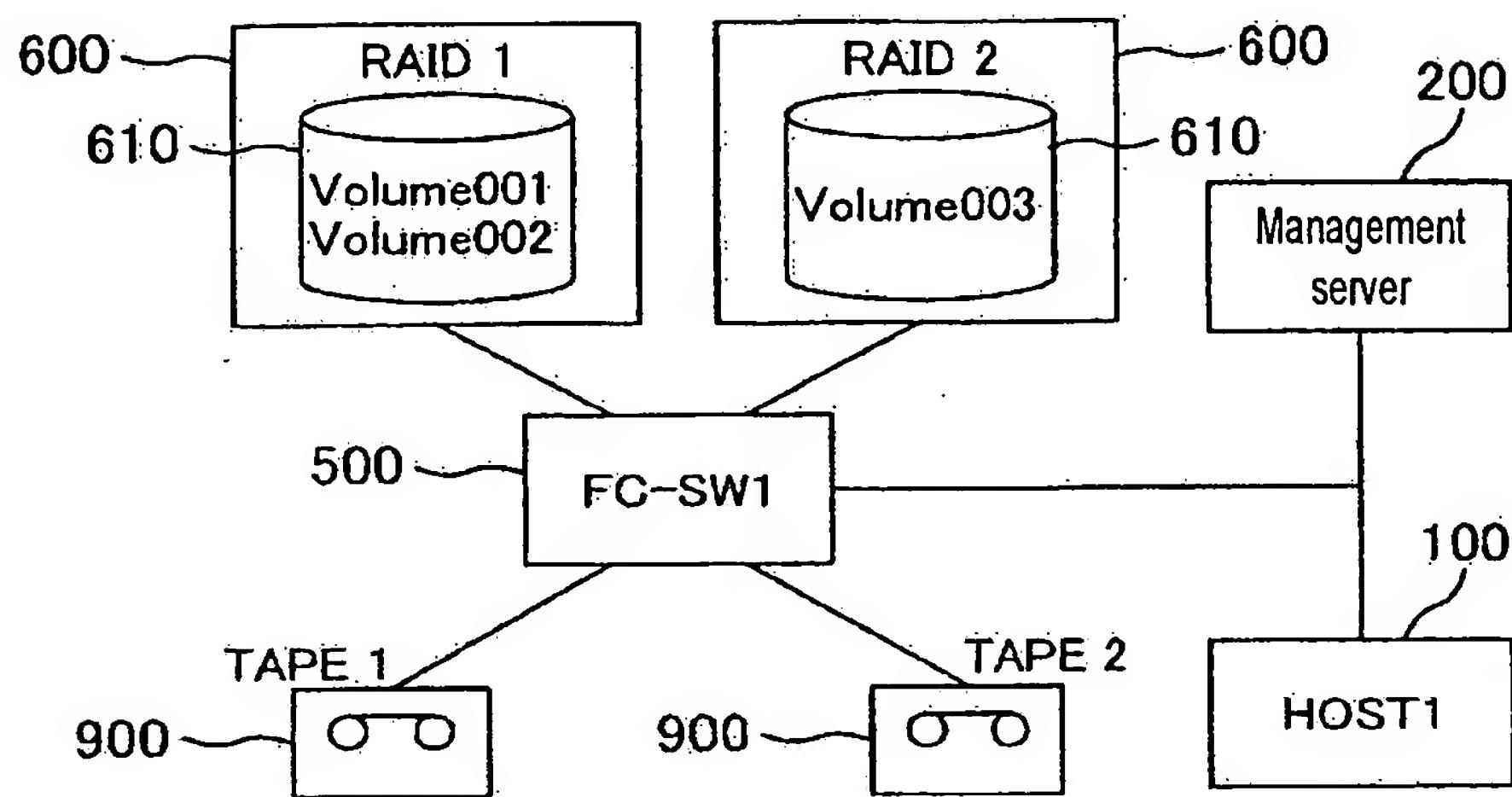


FIG. 3

Applicant: Hirokazu IKEDA, et al.

Title: Information Processing Device, Information Processing Device...

Attorney Docket No. 16869K-111100

Sheet 4 of 22

4/22

Policy ID Policy		Fix		Do Not Fix	
1	Back up Volume 001 onto <input type="checkbox"/> TAPE1 <input checked="" type="checkbox"/> every Monday at 3:00 a.m. ▼	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	Back up Volume 002 onto <input type="checkbox"/> TAPE2 <input checked="" type="checkbox"/> every Monday at 3:00 a.m. ▼	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	Back up Volume 003 onto <input type="checkbox"/> TAPE1 <input checked="" type="checkbox"/> every Monday at 3:00 a.m. ▼	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	Execute a batch job (Volume 003) from Host 1 <input type="checkbox"/> every Monday at 3:30 a.m. ▼	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	Create a User A area (500 MB) on <input type="checkbox"/> Volume 002. ▼	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	Create a User B area (500 MB) on <input type="checkbox"/> Volume 003. ▼	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Global Policy ID Global Policy		Violation	
1	Do not use the same tape device during the same period of time.	1 & 3	702
2	Do not use the same storage device during the same period of time.	3 & 4	
3	Back up a storage volume onto a tape device every Monday at 3:00 a.m.	—	
4	Allocate a volume in accordance with a user service.	5,6	

Degree of Policy violation

Tuning

FIG. 4

Policy ID		Policy		Fix	Do Not Fix
1	Back up Volume 001 onto <input checked="" type="checkbox"/> TAPE1 <input type="checkbox"/> every Monday at 2:00 a.m. ▼			<input type="radio"/>	<input checked="" type="radio"/>
2	Back up Volume 002 onto <input checked="" type="checkbox"/> TAPE2 <input type="checkbox"/> every Monday at 3:00 a.m. ▼			<input type="radio"/>	<input checked="" type="radio"/>
3	Back up Volume 003 onto <input checked="" type="checkbox"/> TAPE1 <input type="checkbox"/> every Monday at 3:00 a.m. ▼			<input type="radio"/>	<input checked="" type="radio"/>
4	Execute a batch job (Volume 003) from Host 1 <input checked="" type="checkbox"/> every Monday at 4:00 a.m. ▼			<input type="radio"/>	<input checked="" type="radio"/>
5	Create a User A area (500 MB) on <input checked="" type="checkbox"/> Volume 001. <input type="checkbox"/> ▼			<input type="radio"/>	<input checked="" type="radio"/>
6	Create a User B area (500 MB) on <input checked="" type="checkbox"/> Volume 002. <input type="checkbox"/> ▼			<input type="radio"/>	<input checked="" type="radio"/>
Global Policy ID		Global Policy		Violation	
1		Do not use the same tape device during the same period of time.		<input type="radio"/>	<input type="radio"/>
2		Do not use the same storage device during the same period of time.		<input type="radio"/>	<input type="radio"/>
3		Back up a storage volume onto a tape device every Monday at 3:00 a.m.		<input type="radio"/>	<input checked="" type="radio"/>
4		Allocate a volume in accordance with a user service.		<input type="radio"/>	<input type="radio"/>
Degree of policy violation <input type="checkbox"/> 4			Tuning <input checked="" type="checkbox"/> OK		

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Applicant: Hirokazu IKEDA, et al.

Title: Information Processing Device, Information Processing Device...

Attorney Docket No. 16869K-111100

Sheet 6 of 22

6/22

701

Policy ID	Policy Description
1	Back up Volume 001 onto TAPE 1 every Monday at 3:00 a.m.
2	Back up Volume 002 onto TAPE 2 every Monday at 3:00 a.m.
3	Back up Volume 003 onto TAPE 1 every Monday at 3:00 a.m.
4	Execute a batch job (Volume 003 used) from Host 1 every Monday at 3:30 a.m.
5	Create a User A area (500 MB) on Volume 002.
6	Create a User B area (500 MB) on Volume 003.

702

Global Policy ID	Weight	Global Policy Description
1	10	Do not use the same tape device during the same period of time.
2	8	Do not use the same storage device during the same period of time.
3	4	Back up a storage volume onto a tape device every Monday at 3:00 a.m.
4	6	Allocate a volume in accordance with a user service.

FIG. 6

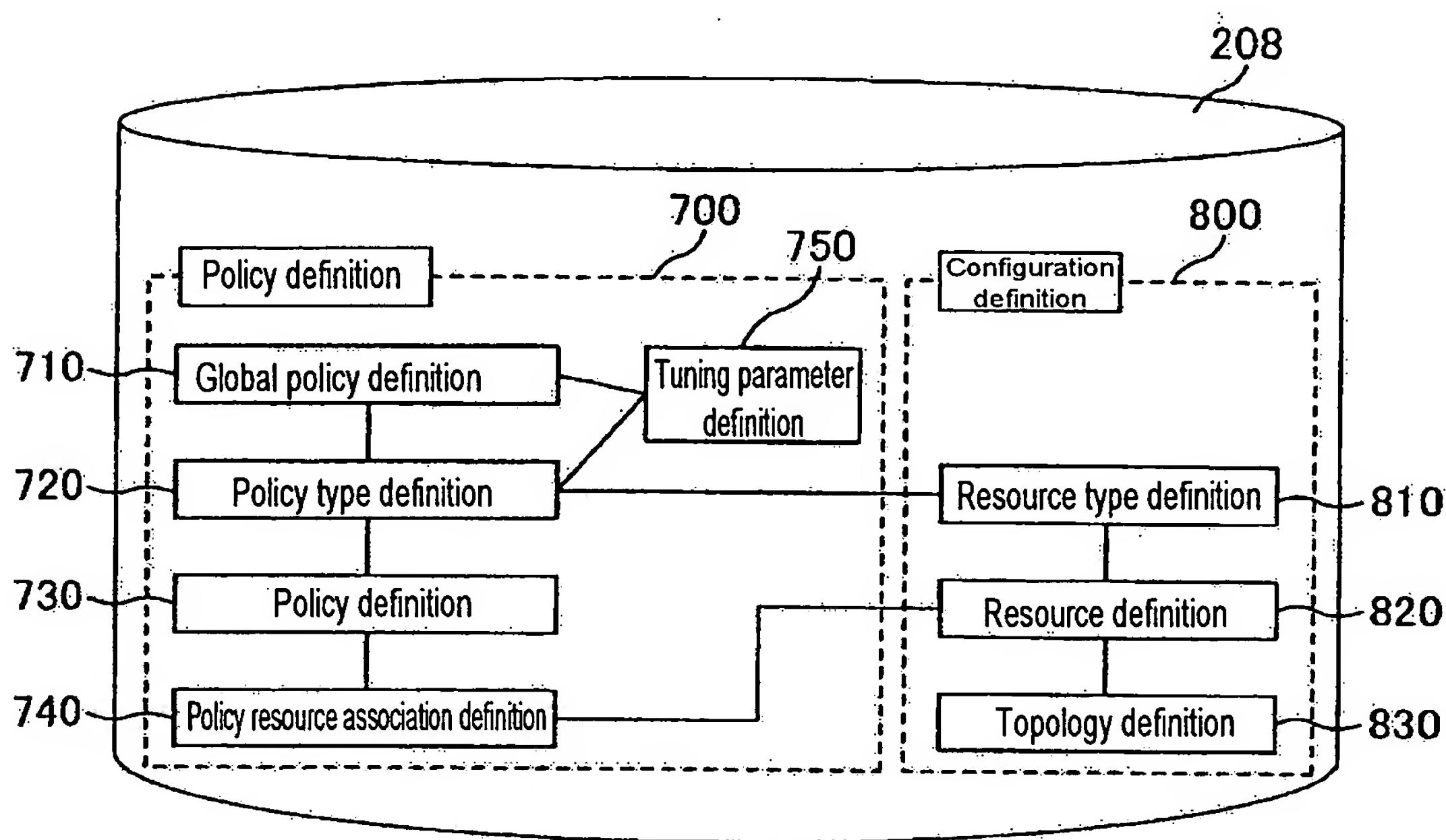


FIG. 7

The diagram shows a table 810 representing a hierarchy of resource types. The columns are 'Resource Type' and 'Child Resource Type'. The rows are:

Resource Type	Child Resource Type
%STORAGE%	%RAID%
%RAID%	%VOLUME%
%VOLUME%	—
%HOST%	—
%FC_SW%	—
%USER%	—

FIG. 8

Applicant: Hirokazu IKEDA, et al.

Title: Information Processing Device, Information Processing Device...

Attorney Docket No. 16869K-111100

Sheet 8 of 22

8/22

820
830

Resource Name	Resource Type	Parent Resource	Management Domain	Service
Volume001	%VOLUME%	RAID1	Stor1	Gold
Volume002	%VOLUME%	RAID1	Stor1	Silver
Volume003	%VOLUME%	RAID2	Stor1	Bronze
RAID1	%RAID%	—	Stor1	—
RAID2	%RAID%	—	Stor1	—
FC SW1	%FC_SW%	—	Stor1	—
TAPE1	%TAPE_DEVICE%	—	Stor1	—
UserA	%USER%	—	Stor1	Gold
UserB	%USER%	—	Stor1	Silver

FIG. 9

710

Global Policy ID	Conditional Expression	Policy TYPE ID	Weight
1	R1[%TAPE_DEVICE%] != R2[%TAPE_DEVICE%] R1[%SCHEDULE%] != R2[%SCHEDULE%]	1	10
2	R1[%RAID%] != R2[%RAID%] R1[%SCHEDULE%] != R2[%SCHEDULE%]	1, 2	8
3	R1[%SCHEDULE%] == at Mon 03:00	1	4
4	R1[%USER%.Service] == R2[%VOLUME%.Service]	3	6

FIG. 10

Applicant: Hirokazu IKEDA, et al.

Title: Information Processing Device, Information Processing Device...

Attorney Docket No. 16869K-111100

Sheet 9 of 22

9/22

720

Policy Type ID	Policy Type	Startup Conditions	Execution Command	Execution Host	Schedule
1	Tape Back up	Scheduled startup	>tpbackup%VOLUME% -t%TAPE_DEVICE%	—	%SCHEDULE%
2	BatchJob_A	Scheduled startup	>batcha%VOLUME%	%HOST%	%SCHEDULE%
3	Volume Allocate	Immediate startup	>allocate -u %USER% -v %VOLUME% -c "500"	—	—

FIG. 11

730,740

Policy ID	Policy Type ID	% SCHEDULE%	% VOLUME%	% USER%	% HOST%	% TAPE DEVICE%	Fix
1	1	at Mon. 02:00(1hour)	Volume001	—	—	TAPE1	Unfixed
2	1	at Mon. 03:00(1hour)	Volume002	—	—	TAPE2	Unfixed
3	1	at Mon. 03:00(1hour)	Volume003	—	—	TAPE1	Unfixed
4	2	at Mon. 03:30(20min)	Volume003	—	Host 1	—	Unfixed
5	3	now	Volume002	UserA	—	—	Unfixed
6	3	now	Volume003	UserB	—	—	Unfixed

FIG. 12

Applicant: Hirokazu IKEDA, et al.

Title: Information Processing Device, Information Processing Device...

Attorney Docket No. 16869K-111100

Sheet 11 of 22

11/22

Global Policy ID	Policy Type ID	Tuning Parameter Type	
1	1	%SCHEDULE%	%TAPE_DEVICE%
2	1	%SCHEDULE%	%TAPE_DEVICE%
	2	%SCHEDULE%	—
3	3	%SCHEDULE%	—
4	3	%VOLUME%	—

FIG. 13

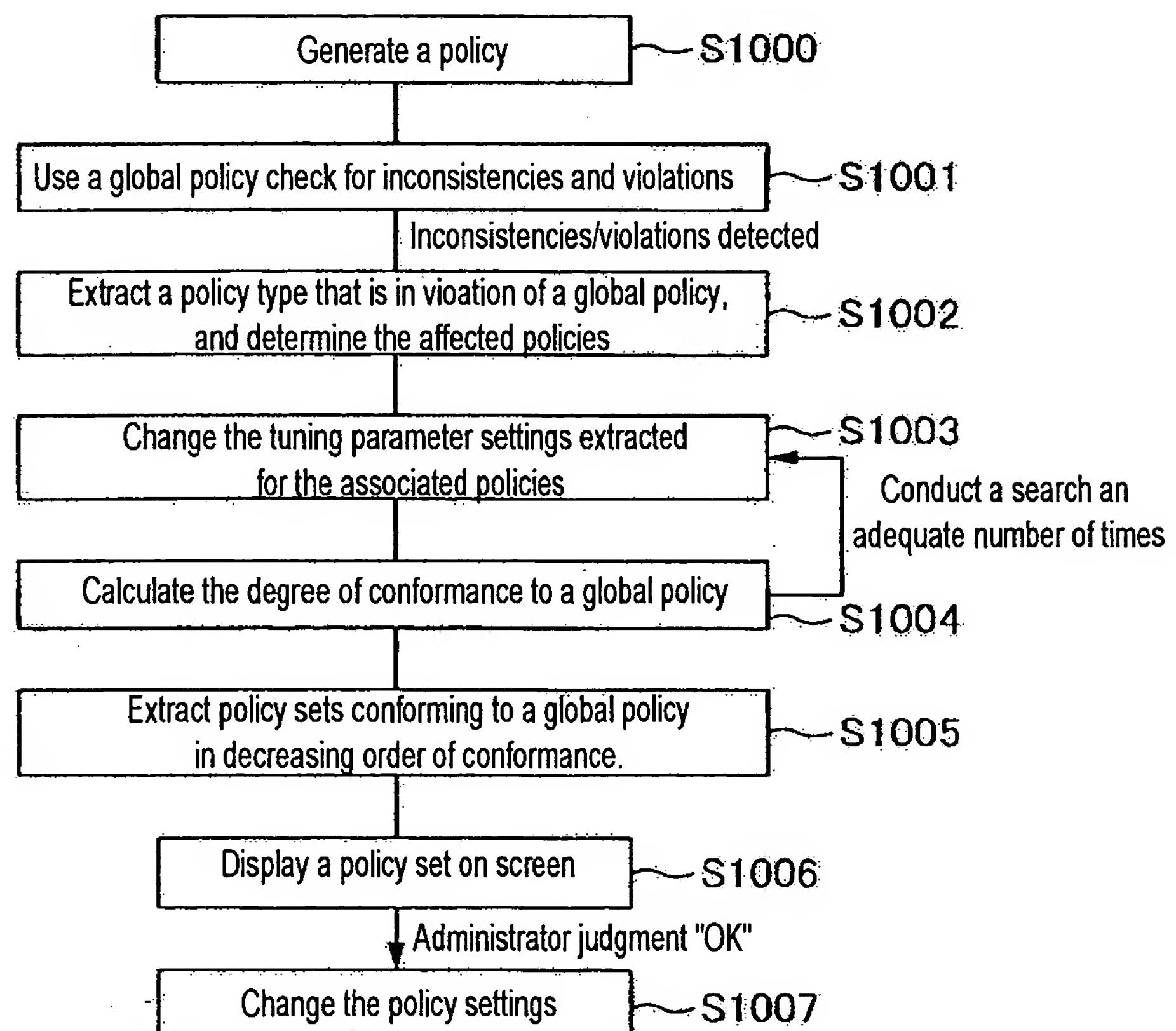


FIG. 14

Policy ID	Policy Type ID	% SCHEDULE %	% VOLUME %	% USER %	% HOST %	% TAPE DEVICE %	Fix
1	1	at Mon. 02:00(1hour)	Volume001	—	—	TAPE1	Unfixed
2	1	at Mon. 03:00(1hour)	Volume002	—	—	TAPE2	Unfixed
3	1	at Mon. 03:00(1hour)	Volume003	—	—	TAPE1	Unfixed
4	2	at Mon. 04:00(20min)	Volume003	—	Host 1	—	Unfixed
5	3	now	Volume001	UserA	—	—	Unfixed
6	3	now	Volume002	UserB	—	—	Unfixed

FIG. 15

Applicant: Hirokazu IKEDA, et al.

Title: Information Processing Device, Information Processing Device...

Attorney Docket No. 16869K-111100

Sheet 13 of 22

13/22

Global Policy ID	Policy Type ID	Tuning Parameter Type	
		%SCHEDULE%	%TAPE_DEVICE%
1	1	+0.3/h	+0.5
2	1	+0.4/h	+0.6
	2	+0.4/h	—
3	1	+1.0/h	—

FIG. 16

Global Policy ID	Policy Type ID	Tuning Parameter Type		
		%SCHEDULE%	%TAPE_DEVICE%	
			TAPE1	TAPE2
1	1	+0.3/h	0	+0.8
2	1	+0.4/h	+0.5	0
	2	+0.4/h	—	—
3	1	+1.0/h	—	—

FIG. 17

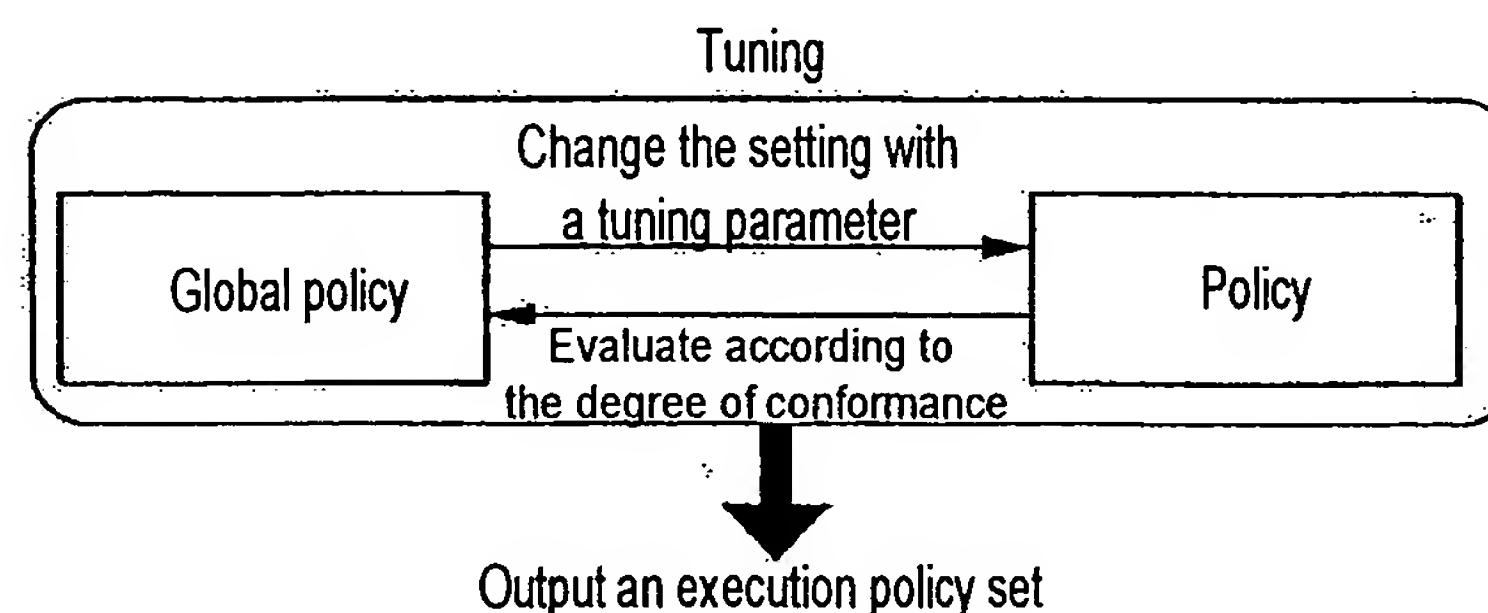


FIG. 18

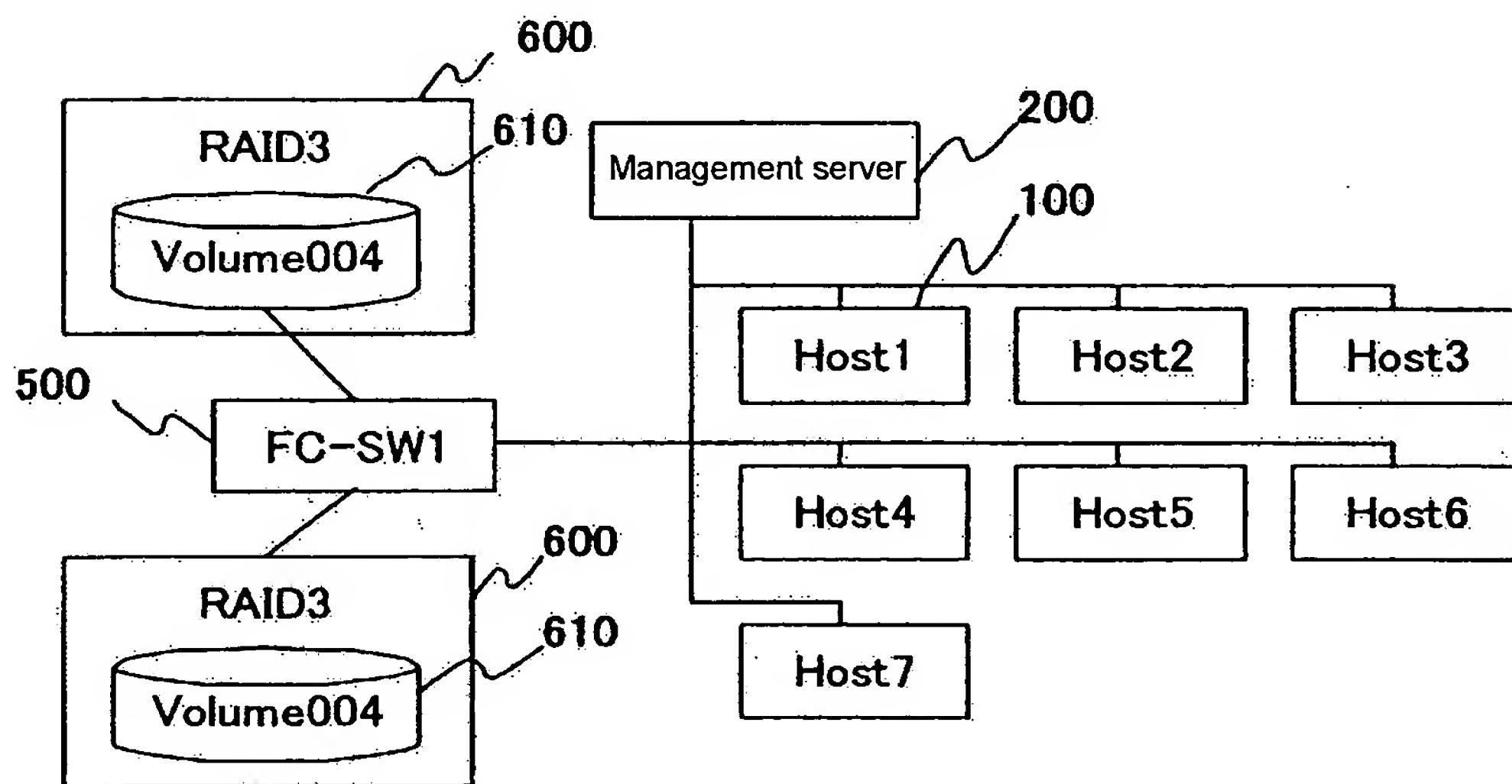


FIG. 19

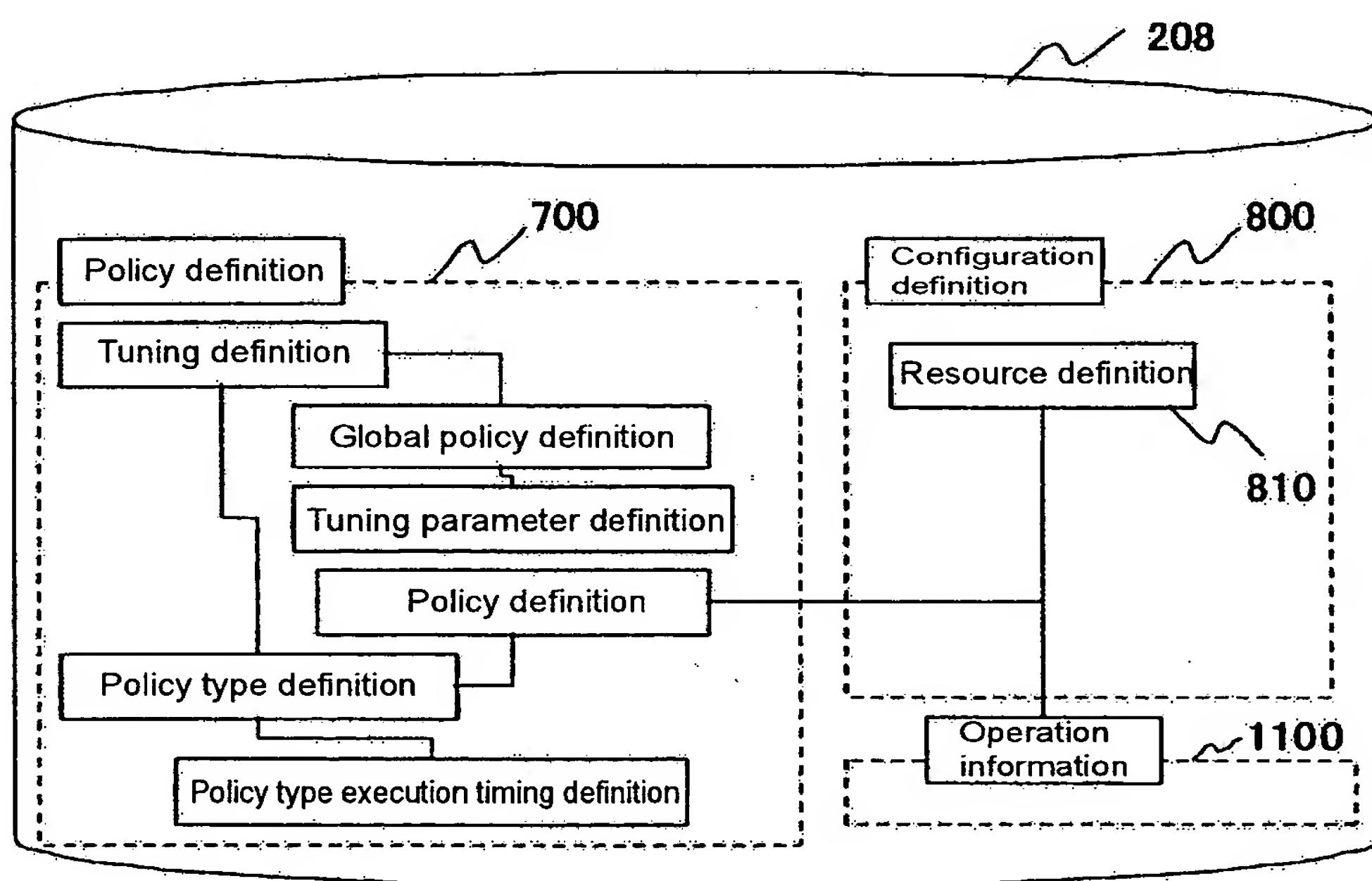


FIG. 20

Applicant: Hirokazu IKEDA, et al.

Title: Information Processing Device, Information Processing Device...

Attorney Docket No. 16869K-111100

Sheet 15 of 22

15/22

820
830

Resource Name	Parent Resource Name	%HOST_TYPE%	%SUBNET%	%SERVICE GROUP%	%CPU USAGE%	%TRANSAC TION NUM%	%VOLUME SIZE%
Host1		SubnetA			20%		
Host2		WEB SERVER	SubnetA	ServiceGroupA	60%	50	
Host3		AP SERVER	SubnetA	ServiceGroupA	30%	30	
Host4		DB SERVER	SubnetA	ServiceGroupA	80%	20	
Host5			SubnetA		40%		
Host6			SubnetB		10%		
Host7			SubnetA		5%		
Volume004	Host5						300GB
Volume005	Host5						200GB

FIG. 21

Applicant: Hirokazu IKEDA, et al.

Title: Information Processing Device, Information Processing Device...

Attorney Docket No. 16869K-111100

Sheet 16 of 22

16/22

Tuning ID	Tuning Timing Type	Tuning Timing Details	Target Global Policy ID	Target Policy Type ID
1	Schedule	%DAY%==SUNDAY	1,2,3	1,2
2	User		4	3
3	Schedule	%TIME%==2:00	5,6	4
4	Event	%EVENT%=="http request was rejected"	7,8,9	5,6,7
5	Schedule	%TIME%==3:00	10,11	8

FIG. 22

Global PolicyID	Tuning Parameter Type	Change Increments	Change Range	Default (Recommended)	Search Method
5	%HOST%	.	SubnetA	Host1	Random
6	%HOST%	.	SubnetA	Host1	Random
7	%MAX_TRANS%	16	Max 1024, Min 16	128	Default reference
8	%MAX_TRANS%	16	Max 1024, Min 16	128	Default reference
9	%MAX_TRANS%	16	Max 512, Min 0	128	Default reference
10	%VOLUME_EXPAND_SIZE%	10	Max 200, Min 0	100GB	Current data reference
11	%POLICY_STATUS%	.	ACTIVE, SUSPEND, ACTIVE	.	Random

FIG. 23

710

Global PolicyID	Conditional Expression	Weight
5	R1.%CPU USAGE% < 50% && R1.%SLJENET% = "SubnetA"	5
6	R1.%HOST% = "Host1" from 6/11/2003 to 6/13/2003	1.0
7	R1.%MAX_TRANSACTION_NUM% where R1.%HOST_TYPE% = "WEB_SERVER" < R1.%MAX_TRANSACTION_NUM% where R1.%HOST_TYPE% = "WEB_SERVER"	5
8	R1.%MAX_TRANS% where R2.%HOST_TYPE% = "AP_SERVER" && R1.%SERVICE_GROUP% = R2.%SERVICE_GROUP%	5
9	R1.%MAX_TRANS% where R1.%HOST_TYPE% = "DB_SERVER" < R2.%MAX_TRANSACTION_NUM% where R2.%HOST_TYPE% = "AP_SERVER" && R1.%SERVICE_GROUP% = R2.%SERVICE_GROUP%	5
10	R1.%VOLUME_EXPAND_SIZE% <= R1.%VOLUME_SIZE%10 when R1.%VOLUME_SIZE% < 30%	1.0
11	R1.%POLICY_STATUS% = "SUSPEND" when R1.%VOLUME_SIZE% < 10%	1.0

FIG. 24

720

Policy Type ID	Policy Type Name	Execution Command	Execution Host
4	BatchJob B	> batchb	%HOST%
5	WebServ Transact	> set max trans %MAX_TRANS%	%HOST%
6	AppServ Transact	> set max trans %MAX_TRANS%	%HOST%
7	DB ServTransact	> set max trans %MAX_TRANS%	%HOST%
8	ExpandVolume	> expandvolume %VOLUME% %VOLUME EXPAND SIZE% Host5	

FIG. 25

Applicant: Hirokazu IKEDA, et al.

Title: Information Processing Device, Information Processing Device...

Attorney Docket No. 16869K-111100

Sheet 20 of 22

ZUIZ2

725

Policy Type ID	Execution Timing Type	Execution Timing Details	Execution Conditions
4	Event	%EVENT%="Global Policy ID 5 was executed." %EVENT%="Global Policy ID 6 was executed."	
5	Event	%EVENT%="Global Policy ID 7 was executed."	%HOST_TYPE%="WEB SERVER"
6	Event	%EVENT%="Global Policy ID 8 was executed."	%HOST_TYPE%="AP SERVER"
7	Event	%EVENT%="Global Policy ID 9 was executed."	%HOST_TYPE%="DB SERVER"
8	Event	%EVENT%="expandvol %VOLUME%"	

FIG. 26

730
740



Policy ID	Policy TypeID	%POLICY_STATUS%	%HOST%	%MAX_TRANS%	%VOLUME%	%VOLUME_EXPAND_SIZE%
7	4	ACTIVE	Host1	.	.	.
8	5	ACTIVE	Host2	128	.	.
9	6	ACTIVE	Host3	72	.	.
10	7	ACTIVE	Host4	98	.	.
11	8	ACTIVE	Host5	.	Volume004 80GB	.
12	8	ACTIVE	Host5	.	Volume005 40GB	.

FIG. 27

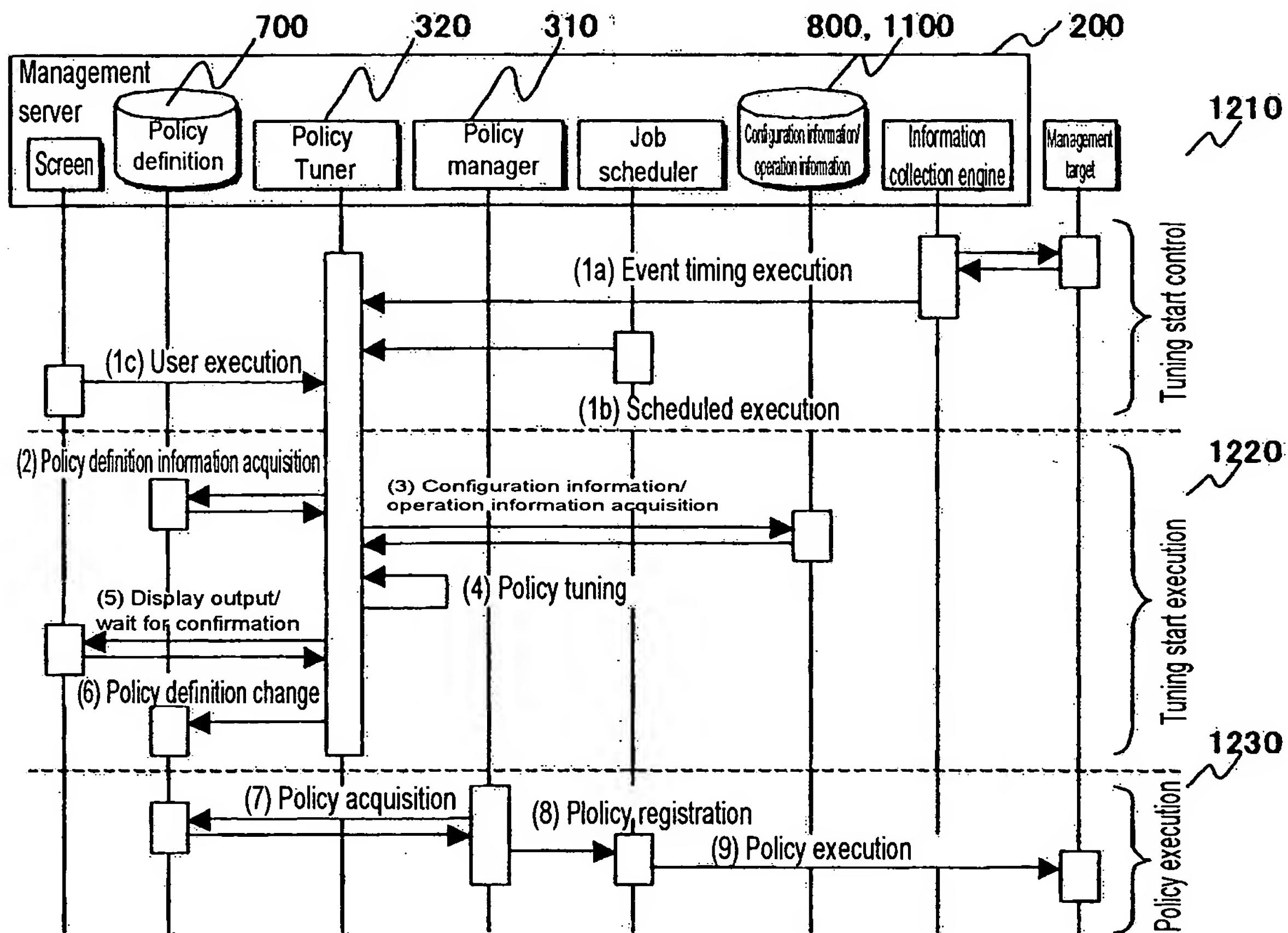


FIG. 28